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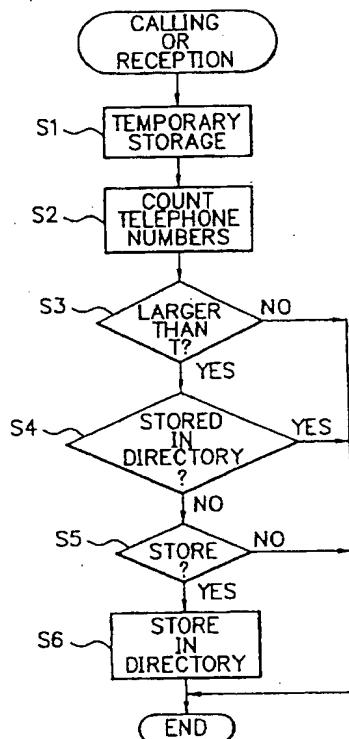
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(54) Abstract Title
Storing frequently used telephone numbers

(57) Telephone numbers of outgoing calls, as dialled by a user, and incoming calls, as obtained via, for example, caller line identification (CLI), are progressively stored, on a first-in-first-out (FIFO) basis, in a temporary storage section which can store a finite number of telephone numbers. When a telephone number is stored, the total number of occurrences of that telephone number in the temporary storage section is counted. In an alternative embodiment, when the current telephone number is already present in the temporary storage section, time stamps may be associated with it and the number of time stamps may then be counted. If the number of occurrences of the current telephone number, as stored in the temporary storage section, or the number of time stamps, is larger than a predetermined threshold number T and the current telephone number has not yet been stored in the directory storage section, the user is asked whether storage of the telephone number is required.

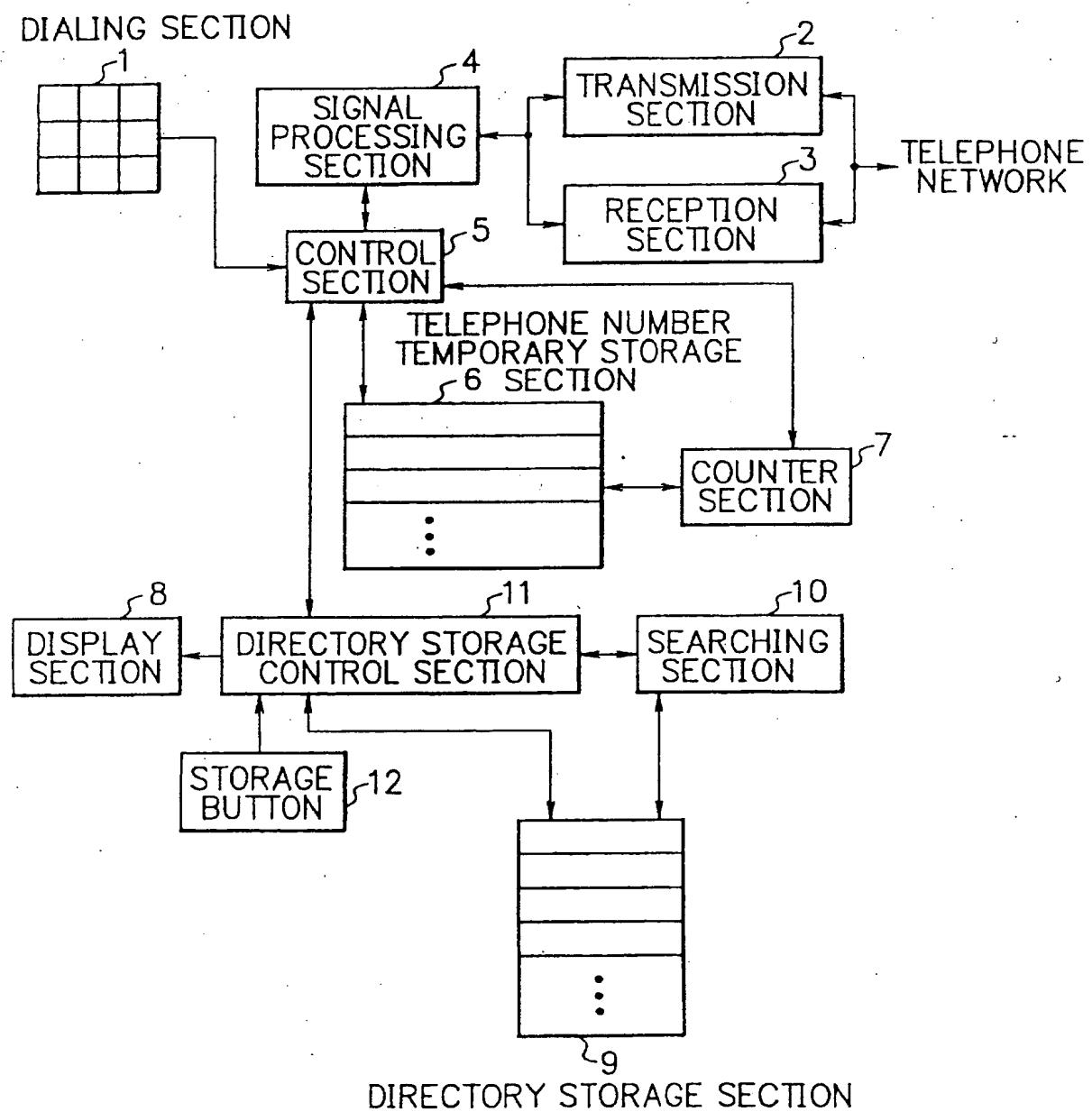
FIG. 2



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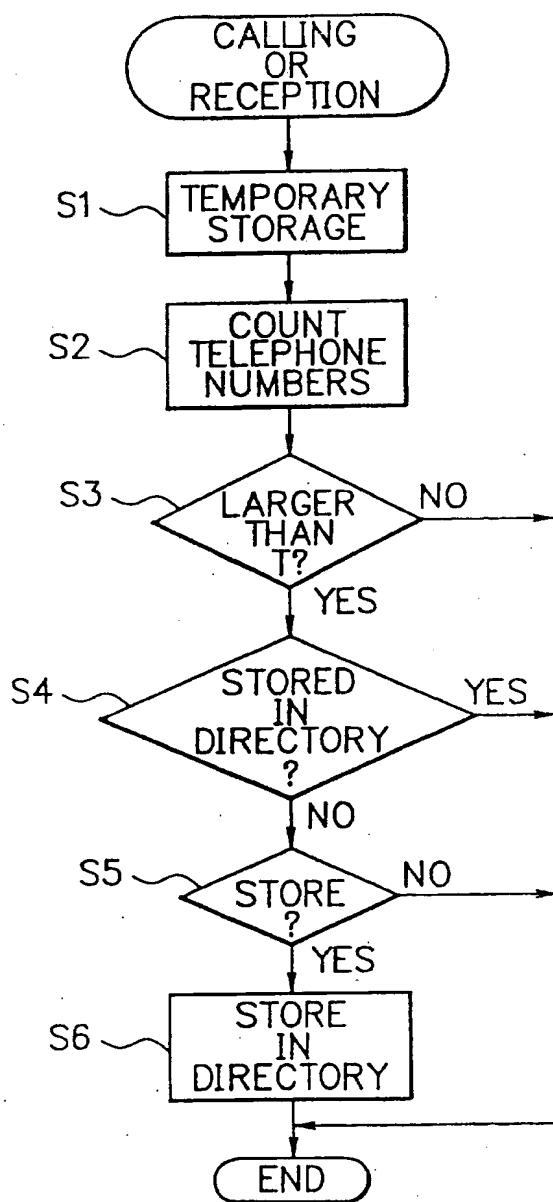
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FIG. 1



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FIG. 2



2331890**DIRECTORY DIALING TELEPHONE SET**

The present invention relates to a directory dialing telephone set which is provided with a directory for storing a plurality of telephone numbers and which has functions for executing calling or dialing of a 5 telephone number in a telephone network which has been stored in the directory.

These days, many of the telephone sets on the market are provided with functions for storing a plurality of telephone numbers in a directory 10 and executing dialing (calling) of a telephone number which has been stored in the directory (hereafter, such a telephone set will be referred to as a "directory dialing telephone set"). The user selects a telephone number from the directory and dials the selected telephone number with easy operation such as pushing one or more buttons.

When a telephone number should be registered in the directory of such a directory dialing telephone set, the user usually selects a registration mode of the telephone set, which is different from the ordinary mode for conversation, by pushing a button etc. Meanwhile, as disclosed in Japanese Patent Application Laid-Open No.SHO63-278451, 15 there has been proposed a directory dialing telephone set which is provided with functions for registering telephone numbers in its directory semi automatically. The telephone numbers which are registered by the directory dialing telephone set include telephone numbers which have been dialed by the user for calling and telephone numbers of calling 20 parties (i.e. calling numbers) which have been informed by the telephone network in services such as "calling number identification presentation" etc. The directory dialing telephone set inquires of the user whether or 25 not the user intends to register the telephone number (i.e. the telephone

number which the user dialed or the telephone number of a calling party which has been informed by the telephone network) if the telephone number has not been registered in the directory yet. The inquiry is executed by the directory dialing telephone set on each telephone call 5 (calling and reception of a call), and the telephone number is registered in the directory if the user intended to register the telephone number and requested the registration by pushing a button etc.

However, such a directory dialing telephone set executes the inquiry depending on the result of the simple judgment on whether or not 10 the current telephone number (i.e. the telephone number which has just been dialed by the user for calling or the telephone number of a calling party which has just been informed by the telephone network) has already been registered in the directory, and thus the inquiry is executed even in the case where the telephone number is dialed by the user very 15 rarely (i.e. even in the case where it is almost clear that the telephone number will not be registered by the user), or even in the case where the user received a call from an undesired calling party.

As described above, conventional directory dialing telephone sets which are provided with functions for registering telephone numbers in 20 their directories require the user to spend time and execute some troublesome operation regardless of the priority of the telephone number.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to 25 provide a directory dialing telephone set provided with functions for registering telephone numbers in its directory, by which the user is released from the troublesome operation with regard to telephone numbers that will not be registered, for example, when the telephone number dialed by the user is a rarely used number, when the user 30 received a call from an undesired calling party, etc., and the user can

register necessary telephone numbers in the directory efficiently and with a minimum of effort.

5 In a first aspect, the present invention provides a directory dialing telephone set comprising directory storage means for storing a directory including a plurality of telephone numbers; means for executing dialing of a telephone number which has been selected by the user from the telephone numbers stored in the directory storage means;

10 telephone call frequency judgement means for judging the frequency of telephone calls made or received by the telephone set to or from a particular telephone number; and

15 directory storage control means for controlling storage of the telephone number in the directory storage means if the telephone number is not already stored therein and if the frequency of telephone calls to or from the telephone number is higher than a predetermined frequency.

20 In a preferred embodiment of the present invention, there is provided a directory dialing telephone set which is provided with a directory storage means for storing a directory including a plurality of telephone numbers and which has functions for executing dialing of a telephone number which has been selected by the user from the telephone numbers stored in the directory storage means, comprising a telephone call frequency judgment means and a directory storage control means. The telephone call frequency judgment means judges whether or not frequency of telephone calls concerning a current telephone number, which have just been dialed by the user or informed via the telephone network, is higher than predetermined frequency. And the directory storage control means executes control concerning storage of the current telephone number in the directory of the directory storage means if the current telephone number has not been stored in the directory of the directory storage means yet and the

telephone call frequency judgment means judged that the frequency of telephone calls concerning the current telephone number is higher than the predetermined frequency.

5 The directory storage control means may inquire of the user whether or not the user intends to store the current telephone number in the directory of the directory storage means if the current telephone number has not been stored in the directory of the directory storage means yet and the telephone call frequency judgment means judged that the frequency of telephone calls concerning the 10 current telephone number is higher than the predetermined frequency, and store the current telephone number in the directory of the directory storage means if the user requested to store the current telephone number.

15 Alternatively, the directory storage control means may store the current telephone number in the directory of the directory storage means if the current telephone number has not been stored in the directory of the directory storage means yet and the telephone call frequency judgment means judged that the frequency of the telephone calls concerning the current telephone number is higher than the predetermined frequency.

20 In accordance with a second aspect of the present invention, there is provided a directory dialing telephone set comprising directory storage means for storing a directory including a plurality of telephone numbers; means for executing dialing of a telephone number which has been selected by the user from the telephone numbers stored in the directory storage means;

25 telephone number temporary storage means for temporarily storing a predetermined number of telephone numbers which have been dialed by the user and telephone numbers of calling parties which have been informed via the telephone network;

30 counter means for counting the number of times a current telephone number, which has been dialed by the user or informed via the telephone network, has been stored in the telephone number temporary storage means;

searching means for searching the directory storage means for the current

telephone number and judging whether or not the current telephone number has already been stored in the directory of the directory storage means; and

5 directory storage control means for controlling storage of the current telephone number in the directory of the directory storage means if the number of times which has been counted by the counter means is larger than a predetermined threshold number and the searching means judges that the current telephone number has not been stored in the directory of the directory storage means.

10 The directory storage control means may inquire of the user whether or not the user intends to store the current telephone number in the directory of the directory storage means if the number of times which has been counted by the counter means is larger than a predetermined threshold number and the searching means judged that the current telephone number has not been stored in the directory of the directory storage means yet, and store the current telephone number in the directory of the directory storage means if the user requested to store the current telephone number.

15 Alternatively, the directory storage control means may store the current telephone number in the directory storage means if the number of times which has been counted by the counter means is larger than a predetermined threshold number and the searching means judged that the current telephone number has not been stored in the directory of the directory storage means yet.

20 In accordance with a third aspect of the present invention, there is provided a directory dialing telephone set comprising directory storage means for storing a directory including a plurality of telephone numbers; means for executing dialing of a telephone number which has been selected by the user from the telephone numbers stored in the directory storage means;

25 telephone number temporary storage means for temporarily storing telephone numbers which have been dialed by the user, telephone numbers of calling parties which have been informed via the telephone network, and time stamps concerning the telephone numbers;

update means for updating the telephone numbers and the time stamps stored in the telephone number temporary storage means so as to delete telephone numbers and the time stamps which have passed a predetermined period;

counter means for counting the number of time stamps concerning a current telephone number, which has just been dialed by the user or informed via the telephone network, that exist in the telephone number temporary storage means;

10 searching means for searching the directory storage means for the current telephone number and judging whether or not the current telephone number has already been stored in the directory of the directory storage means; and

15 directory storage control means for controlling storage of the current telephone number in the directory of the directory storage means if the number of time stamps which has been counted by the counter means is larger than a predetermined threshold number and the searching means judges that the current telephone number has not been stored in the directory of the directory storage means.

20 The directory storage control means may inquire of the user whether or not the user intends to store the current telephone number in the directory of the directory storage means if the number of time stamps which has been counted by the counter means is larger than a predetermined threshold number and the searching means judged that the current telephone number has not been stored in the directory of the directory storage means yet, and store the current telephone number in the directory of the directory storage means if the user requested to store the current telephone number.

25 Alternatively, the directory storage control means may store the current telephone number in the directory of the directory storage means if the number of time stamps which has been counted by the counter means is larger than a predetermined threshold number and the searching means

judged that the current telephone number has not been stored in the directory of the directory storage means yet.

Preferred features of the present invention will now be described, purely
5 by way of example only, with reference to the accompanying drawings, in
which:-

Fig.1 is a block diagram showing functional blocks of a directory
10 dialing telephone set according to a first embodiment of the present
invention concerning storage of telephone numbers;

Fig.2 is a flow chart showing the operation of the directory
dialing telephone set of the first embodiment concerning storage of
telephone numbers;

15 Fig.3 is a block diagram showing functional blocks of a directory
dialing telephone set according to a second embodiment of the present
invention concerning storage of telephone numbers; and

Fig.4 is a flow chart showing the operation of the directory
dialing telephone set of the second embodiment concerning storage of
20 telephone numbers.

25 Fig.1 is a block diagram showing functional blocks of a directory
dialing telephone set according to a first embodiment of the present
invention concerning storage of telephone numbers. The directory
dialing telephone set of the first embodiment comprises a dialing section 1
composed of push buttons etc. for letting the user dial telephone numbers,
30 a transmission section 2 for transmitting a telephone number which has